

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

This amendment cancels claims 1, 5, 6, and 8 from this case and substitutes claims 13-16 therefore. This amendment also adds new claim 17 that is dependent on claim 16. Original claim 2 now depends from new claim 13.

Specification

The disclosure has been objected to on the grounds that the Brief Description of the Several Views of the Drawings was not separate from the Detailed Description of the Invention.

This amendment adds a Brief Description of the Several Views of the Drawings to the specification at the top of page 8, and changes the heading of Detailed Description of the Drawings to Detailed Description of the Invention, also at the top of page 8.

Claim Rejections 35 U.S.C. § 112

Claims 1, 2, 5, 6, and 8 have been rejected under 35 U.S.C. 112, the second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In each of the claims, the Examiner has stated that it is unclear what each claim comprises.

Claims 1, 5, 6, and 8 have been cancelled and rewritten as new claims 13-16 in terms that clearly and positively set forth the subject matter which applicant considers to be his invention. Claim 2 is now dependent on new claim 13.

It is believed that newly drafted claims 13-16 overcome the Examiner's rejection under 35 U.S.C. 112.

Claim Rejections 35 U.S.C. § 102(b)

Claims 5, 6 and 8 are rejected under 35 U.S.C. 102 (b) as being anticipated by Asano et al. (Asano).

Claims 5, 6 and 8 have been canceled. To the extent that new claims 14, 15, and 16 contain limitations that are similar to the limitations recited in former claims 5, 6, and 8, this rejection is respectfully traversed.

To be a proper rejection under 35 U.S.C. 102, a reference must show each and every feature of the claim. Asano fails in this regard.

The Asano patent is directed to a method and apparatus for grinding a workpiece having a cylindrical shape. The wheelhead is fed into the workpiece at a first rough grinding feed rate G1, then at a fine grinding feed rate G2 and finally at a finish grinding feed rate G3. A process measuring device 24 having a probe 24a is used to measure the size of the cylindrical workpiece while grinding takes place.

The Examiner states that in Asano, the line of action extends at an angle of less than 90 degrees to the axis of rotation of the workpiece. This is not correct. In Asano, the line of action of the wheelhead is at exactly 90 degrees to the axis of rotation of the wheelhead. Figure 3 shows the wheelhead moving in the X direction. Figure 3 likewise shows the axis of rotation of the workpiece aligned in the Z direction. Thus, the line of action of the wheelhead is at an angle of 90 degrees to the axis of rotation of the workpiece. Asano discloses that the work table 12 is mounted for motion along the Z axis. However, there is no disclosure in Asano that the work table 12 moves while the workpiece is being ground. A work table movable in the Z direction is not new.

However, a wheelhead which moves in a line of action at an angle of less than 90 degrees to the axis of rotation of a workpiece is new, and is not shown by Asano.

Claim 14 recites that a cylindrical surface of the workpiece can be ground by the cylindrical surface of the grinding wheel and an adjoining radial end face of the workpiece can be ground by the circular face of the grinding wheel in a single plunge grind. This is not shown or taught by Asano. Asano has no disclosure whatsoever that the workpiece has an adjoining radial end face, or that a radial end face of the workpiece can be ground by the circular face of the grinding wheel in a single plunge grind. Although the work table 12 in Asano is moveable in the Z direction, there is no disclosure that the table is moved while the workpiece is being ground.

For the reasons stated above, a rejection of claim 14 under 35 U.S.C. 102(b) as being anticipated by Asano would be untenable and should not be made.

With regard to former claim 6 and new claim 15, in Asano, there is no disclosure at all that the workpiece is moved parallel to the Z axis while the workpiece is being machined. Further there is no disclosure that the computer is programmed to generate X and Z axis drive control signals to produce simultaneous movement of the wheelhead and the workpiece. There is also no disclosure that the movement of the wheelhead relative to the workpiece is along a line of action which subtends an angle with the Z axis which is less than 90 degrees. Lastly there is absolutely no disclosure or teaching in Asano that the circular face of the wheel engages a radial end face of the workpiece to grind the end face to size as the wheel is advanced along the supposed line of action. The only disclosure regarding any of these features is found in applicant's own patent application.

Applicant's own disclosure may not be used against him to modify a prior art reference in order to reject applicant's own claims. For this reason, any rejection of claim 15 under 35 U.S.C. 102 would be improper, and should not be made.

With respect to former claim 8 and new claim 16, the Examiner states that the computer controlled grinding machine shown by Asano is programmed to move the wheelhead in the workpiece carriage along two orthogonal directions so as to produce a net movement of the wheelhead relative to the workpiece along a line of action which subtends an angle of less than 90 degrees relative to the axis of rotation of the workpiece. This rejection is respectfully traversed.

As argued above in connection with claims 14 and 15, there is no disclosure at all in Asano that the table 12 is moved in the Z-axis direction at the same time that the grinding wheel is moved in the X-axis direction to produce a net movement of the wheelhead along the line of action which subtends an angle of less than 90 degrees relative to the axis of rotation of the workpiece. The entire disclosure of the Asano reference is directed to the amount of in-feed to be used during the three grinding steps, and the amount of grinding wheel back-off to be used between the grinding steps. The only teaching of advancing the wheel at an angle to the axis of rotation of the workpiece is found in applicant's own disclosure, and to modify the teaching of the Asano reference in accordance with applicant's own disclosure is improper and cannot be used as a basis upon which to reject applicant's claims.

For the foregoing reasons, any rejection of claims 14-16 as unpatentable over Asano under 35 U.S.C. 102(b) is believed to be improper and should not be made.

Former claims 1 and 2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Asano et al. (Asano) in view of Kamamura et al (Kamamura).

The Examiner's rejection states that Asano discloses a computer which is programmed to generate appropriate X-axis drive and Z-axis drive control signals to produce simultaneous movement of the wheelhead and workpiece. There is no disclosure in Asano that there is simultaneous movement of the wheelhead and the workpiece. Although the work table 12 in Asano is moveable, there is no disclosure that the table is moved while the workpiece is being ground. There is no disclosure in Asano that any portion of the grinding wheel other than the cylindrical periphery of the wheel performs any grinding. The workpiece in Asano shows only a cylindrical surface that is ground, no annular shoulder surface is ground. There is no movement of the wheelhead in Asano relative to the workpiece along a line of action which subtends an angle with the Z-axis which is less than 90 degrees. Asano does not teach, show or render obvious engaging a radial shoulder of the workpiece to grind the shoulder to size as the head is advanced along the line of action. Any such disclosure is found only in applicant's own patent specification.

The Examiner admits that Asano fails to disclose a grinding wheel mounted on a wheelhead having drive means for the moving the wheelhead relative to the workpiece parallel to an X-axis and a Z-axis respectively. The Examiner proposes the teaching of Kamamura to supply this deficiency of Asano.

Kamamura however is not available for use as a reference against applicant's invention. Applicant's invention claims priority of a prior Great Britain application

having a filing date of February 3, 1999. Kamamura claims priority of a prior Japanese application having a filing date of June 7, 2000. Applying the requirements of 35 U.S.C. 102, since the Kamamura publication date is January 31, 2002, it is not earlier in time than the effective filing date of the instant application, therefore Kamamura does not qualify as prior art under 35 U.S.C. 102(a). The publication or issue date of Kamamura is not more than one year prior to the effective filing date of the instant application. Hence, Kamamura does not qualify as prior art under 35 U.S.C. 102(b). Since the filing date of Kamamura is not earlier than the effective filing date of the instant application, Kamamura does not qualify as prior art under 35 U.S.C. 102(e). It is noted that the Office Action Summary indicates an acknowledgment of applicant's claim for foreign priority under 35 U.S.C. 119 (a)-(d) or (f) and that certified copies of the priority documents have been received in the National Stage application from the International Bureau. As a result, applicant has perfected his claim for foreign priority and the patent to Kamamura is not available as a reference to reject applicant's claims.

Assuming arguendo that Kamamura is available as a reference, Kamamura does not cure the deficiencies of Asano in showing, teaching or rendering obvious applicant's invention as claimed.

Kamamura really adds nothing to the teaching of Asano. In Asano, the wheel is moved perpendicular to the axis of rotation of the wheel. In Kamamura, the wheel is moved perpendicular to the axis of rotation of the wheel. In Asano, the workpiece is ground by the cylindrical periphery of the wheel. In Kamamura, the workpiece is ground by the cylindrical periphery of the wheel. In Asano, the workpiece is ground by the

periphery of the wheel and there is no grinding of a radial end face of the workpiece by the wheel. In Kamamura, the workpiece is ground by the periphery of the wheel and there is no grinding of a radial end face of the workpiece by the wheel. In Asano the circular face of the disk does not grind any portion of the workpiece. In Kamamura, the circular face of the disk does not grind any portion of the workpiece. Thus, there is no difference in the teachings of Asano and Kamamura except for the fact that the axis of rotation of the wheel in Kamamura is not parallel to the axis of rotation of the workpiece.

For the foregoing reasons, it is believed that the former rejection of claims 1 and 2 under 35 U.S.C. 103 as unpatentable over Asano in view of Kamamura, and any anticipated rejection of claims 13 and 2 under 35 U.S.C. 103 as unpatentable over Asano in view of Kamamura is untenable and should not be made.

The Examiner contends that Asano discloses the concept of a grinding wheel that is mounted for rotation about an axis which remains parallel to the workpiece axis of rotation. While this is true, as discussed above, the Asano wheel is not moved in a direction which is less than 90 degrees to the axis of rotation of the workpiece.

In that the Examiner no longer relies on the references to Imai et al or Wirz, it is believed that arguments with regard to those references are now moot.

For the foregoing reasons it is believed that the claims now appearing in this case are in condition for allowance, and an early notice to such effect is respectfully solicited.

In the event that the Examiner does not agree that the claims are now in condition for allowance, he is courteously invited to contact the undersigned at the number given below in order to discuss any changes which the Examiner believes would lead to an

allowance of the claims.

It is not believed that there are any fees in addition to the fee for the one month extension of time that are necessitated by the entry of this amendment. However in the event that any additional fees or charges are required, authorization is hereby given to charge such fees to applicant's Deposit Account No 50-0852. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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